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EXAMINER

DICKEY, THOMAS L

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 01/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,444

Applicant(s)

JANESICK, JIM

Examiner

Thomas L Dickey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-71 is/are pending in the application.
- 4a) Of the above claim(s) 12-71 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 April 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

1. The preliminary amendment filed on 04/15/02 has been entered.

Election/Restriction

In Paper No. 5, Applicant traverses the Requirement of Election of Species insofar as figures 1 and 2 show different views of a single embodiment. Applicant's reasoning appears well founded, and the first embodiment, which Applicant elects, is considered to encompass the subject matter disclosed by both figures 1 and 2. Applicant's election of claims 1-11 and 43-50 is acknowledged. Claims 12-42 and 51-71 are withdrawn.

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims **1-11**, drawn to a method, classified in class 438, subclass 438.

- II. Claims **43-50**, drawn to a device, classified in class 257, subclass 291.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case unpatentability of the Group II product invention would not necessarily imply unpatentability of the Group I process invention, because the product of the Group II invention could be made by a materially different process

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from that of the Group I invention. For example, the product of claim 1 could be made by a process that includes a step of fabricating a photoreceptor with a readout gate having solid, uniform thickness throughout, a process materially different from the process of claim 43.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Thomas J. Burton on 01/06/03 a provisional election was made without traverse to prosecute the invention of Group II, claims 1-11. Applicant in replying to this Office action must make affirmation of this election. Claims 43-50 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Oath/Declaration

4. The oath/declaration filed on 10/15/01 is acceptable.

Drawings

5. Corrected or substitute drawings, sheets 1-8, were received on 04/15/02. These drawings have been entered but are objected to as outlined below. Original drawing sheets 1-5 have been cancelled.

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The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 10/30/02, have been approved as to the proposed change but objected to as outlined below. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

6. The drawings are objected to by the PTO Draftsperson for the reasons noted on the attached Notice of Draftsperson's Patent Drawing Review, form PTO-948.

The drawings are objected to because figure 1 attempts to combine two separate figures under one caption, and figures 2,3, and 4 each attempt to combine three separate figures under one caption.

In figure 1, the "Control Circuitry" drawing is a distinct figure from the figure showing the photoreceptor, reset transistor, source follower output amplifier, and a select transistor.

In figures 2, 3, and 4, a voltage vs. time graph (elements 220-224) and various voltage vs. space graphs are improperly combined with depictions of cross-sections of various embodiments of an imager cell.

The Control Circuitry figure must be assigned its own figure #, with caption. The voltage vs. time graph must be separated from the cross sections and assigned its own figure #, with caption. The various voltage vs. space graphs must be separated from the cross sections and assigned their own figure #s, with captions. It appears that Applicant has submitted 15 separate drawings. Applicant should consider labeling the Control

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Circuitry figure as figure 9, and re-labeling each of the three sets of figures on sheets 2,3, and 4 as figures 2A-2C, 3A-3C, and 4A-4C. The BRIEF DESCRIPTION must be amended to supply a brief description of each figure, and the DETAILED DESCRIPTION must be amended to refer to the new figure numbers.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Priority

7. Applicants have made no claim for priority.

Information Disclosure Statement

8. If applicant is aware of any relevant prior art, he/she requested to cite it on form **PTO-1449** in accordance with the guidelines set forth in M.P.E.P. 609.

Specification

9. The abstract of the disclosure is objected to because:

The abstract is not clearly indicative of the invention to which the claims are directed. The use of the term "Pinned Transfer Gate" is essentially meaningless, as this term is not a term known to the art. The phrase "Pinned Transfer Gate disposed to transfer

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charge” does not convey to the reader how said transfer is accomplished. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. These claims are directed to combinations that include an element referred to as a “Pinned Transfer Gate”. It is not known in the art how to make and use a “Pinned Transfer Gate,” nor has Applicant sufficiently explained how to do so. In particular:

- I. Applicant has not shown, nor is it known to the art, whether a “Pinned Transfer Gate” must be electrically tied to the substrate and if so, applicant has not shown how this tying is accomplished.
- II. One having skill in the art would not understand whether a “Pinned Transfer Gate” requires that an insulated, clocked transfer gate, such as element 210 shown in applicant’s figure 2, be present in order to achieve the invention, or on the other

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hand whether the invention requires that such an insulated, clocked transfer gate not be present, as seems to be implied in page 7, lines 1-4 of the application.

In the context, not of an imager but rather of a charge transfer device, Hynecek 4,994,875 discloses a "virtual transfer gate" wherein a "virtual electrode" prevents electrons from transferring until the voltage on an insulated "conductive electrode" reaches a critical negative voltage. Hynecek's "virtual electrode" is a P type region which is tied to a substrate by virtue of being in electrical contact with P+ type channel stops which are in turn in electrical contact with the substrate. Hynecek requires that there be no conductive electrode formed over the "virtual electrode" region. Would it be possible for one to make the element Applicant identifies as a "Pinned Transfer Gate" by following the teachings of Hynecek 4,994,875? If so, Applicant should amend figure 2 so that insulated charge transfer gate 210 is not in the figure.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claims 1 and 5-8 are rejected under 35 U.S.C. 102(e) as being anticipated by GUIDASH (20020121656).

Guidash discloses an imager cell comprising a photoreceptor, being a photodiode 12, a sense node 24; and a pinned transfer gate 14 disposed to transfer charge between the photoreceptor 12 and the sense node 24, a reset transistor 16 disposed to reset the sense node 12, and an output amplifier 18, being configured as a source follower amplifier, coupled to the sense node 24. Note figures 2 and 5 of Guidash.

Claims 1,2, and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by the device depicted in figure 1 of ZHENG et al. (20020121655).

Zheng et al. discloses an imager cell comprising a photoreceptor, being a photodiode 22, a sense node (the drain of the p-mosfet), and a pinned transfer gate (the p-mosfet) disposed to transfer charge between the photoreceptor 22 and the sense node, wherein the pinned transfer gate comprises a p-doped pinned region (labeled p+) in an n-doped transfer region (labeled n-well). Note figure 1 of Zheng et al.

Claims 1,3,4, and 6 rejected under 35 U.S.C. 102(e) as being anticipated by the device depicted in figure 5 of ZHENG et al. (20020121655).

Zheng et al. discloses an imager cell comprising a photoreceptor, being a photogate, a sense node 96, and a pinned transfer gate 83 disposed to transfer charge between the photoreceptor (photogate) and the sense node 96, and a photoreceptor readout gate 94 disposed above the photoreceptor (photogate). Note figure 5 of Zheng et al.

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Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A. Claims 9-11 rejected under 35 U.S.C. 103(a) as being unpatentable over ZHENG et al. (20020121655) in view of TURKO et al. (5,121,214).

Zheng et al. discloses an imager cell with all the limitations of claims 9-11, including a photoreceptor readout gate, except a readout clock connection coupled to the photoreceptor readout gate, control circuitry coupled to the readout clock connection, the control circuitry supplying a photoreceptor readout clock, the photoreceptor readout clock is characterized by a V+ level applied during an integration period, and a V- level applied during a transfer period. Note figure 5 of Zheng et al.

However, Turko et al. discloses an imaging array with a readout clock connection 18 coupled to a photoreceptor readout gate, control circuitry 14 coupled to the readout clock connection 18, the control circuitry 14 supplying a photoreceptor readout clock 68, the photoreceptor readout clock 68 is characterized by a V+ level (the upper value of clock trace 68) applied during an integration period 92, and a V- level (the lower value of clock trace 68) applied during a transfer period 94. Note figures 1 and 3 of Turko et al. Therefore, it would have been obvious to a person having skill in the art to augment

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Zheng et al.'s imager cell with the readout clock connection coupled to a photoreceptor readout gate, control circuitry coupled to the readout clock connection, the control circuitry supplying a photoreceptor readout clock, the photoreceptor readout clock characterized by a V+ level applied during an integration period, and a V- level applied during a transfer period, such as taught by Turko et al. in order to compress the charge of an entire video field into a single video line to thus provide that the resultant line can then be "dumped" out of a horizontal register by sequencing the combined charges out past a charge coupled amplifier.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 703-308-0980. The examiner can normally be reached on Mon-Thu 8-6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 703-308-0980. The examiner can normally be reached on Mon-Thu 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

TLD
01/2003


Minh Loan Tron
Primary Examiner